

1-year postdoctoral position

Synthesis of organic and organometallic redox probes for the development of electrochemical amphetamine sensors based on aptamer recognition.

Employer: CNRS

Contract type: Contract/Project (1 year)

Workplace: Paris, Laboratoire d'Electrochimie Moléculaire (LEM), Université Paris Diderot

Skill area: Organic Chemistry – Surface Modification

Years of experience: ≤ 2 years after PhD

Salary range: 2500 euros/month

Starting date : 01/02/2011

Employer:

A postdoctoral position is available for 1 year at the department of Chemistry, Université Paris Diderot in the field of organic chemistry and electrochemistry. This postdoctoral is funded by the ANR (Agence Nationale de la Recherche). The research team from LEM/ITODYS participating in this project have recognised skills in the fields of organic and organometallic synthesis, and more specifically in the chemical modification of redox probes and their use in analytical applications.

Mission – Description of the project:

In the past 10 years, identification and rapid screening of amphetamine-based drugs have become a major public health issue as a consequence of their increasingly frequent and commonplace consumption. Today, the screening techniques used for amphetamines and their associated metabolites are performed on urine samples, using spectroscopical methods. In order to progress in this direction, we plan to replace antibodies with aptamers having enantioselective recognition properties with respect to amphetamine derivatives, and to change the optical measurement of an enzyme label activity by the electrochemical detection. The project is multi-disciplinary and requires complementary competences of several teams recognised in the respective distinct domains, ranging from the selection of aptameric sequences to the chemical labelling of nucleic acid sequences with redox active compounds, including the functionalisation of conducting surfaces and the development of bioanalytical techniques, as well as the modelling of physicochemical processes occurring at interfaces.

The heart of the present proposal is centred on the design and the implementation of an electrochemical aptasensor having enantioselective recognition properties with respect to a class of amphetamine derivatives.

In this project, the post-doc will be in charge of 1) The design and synthesis of the redox markers, 2) The modification of aptamers and 3) The functionalisation of target molecules by redox markers. An important objective will be also to develop a generic synthesis methodology for the bi-functionalisation of nucleic acids with labels and surface anchoring groups.

Candidates profiles

This position requires a PhD in chemistry obtained for no longer than 2 years. The successful candidate should have a strong background in organic and organometallic chemistry. Knowledges in functionalisation of nucleic acids and purification using chromatographic techniques and also electrochemistry would be appreciated as well. The candidate has to be familiar with a range of experimental and characterization techniques, and has good communications skills (ability to communicate fluently in french or English).

If you are interested, please send your application containing CV and motivation letter to Dr. Claire Fave (claire.fave@univ-paris-diderot.fr)